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The Impact of Neuro Linguistic Programming on Employees' Performance:
An Experimental Study in Al-Hussein Bin Abdullah II Industrial Estate-Jordan

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Abstract

This study investigates the impact of Neuro Linguistic Programming (NLP) on employees' performance, using the experimental approach in Al-Hussein Bin Abdullah II Industrial Estates. The focus is on behavioral-based performance through four dimensions: self-efficacy, communication skills, problem-solving skills and the employees' productivity.

The sample consists of (44) employees from different departments distributed randomly into two groups. The first group (experimental) has attended the NLP training program introduced by a qualified specialist in this field, and the second group represents the control group. Leven test is used to verify variance homogeneity between groups. Pre-test and post-test are adopted by distributing questionnaires to the managers at two different time periods.

Independent and paired- sample T-test are applied on both groups to measure the differences between the pre-and post-tests using the Statistical Package for Social Sciences (SPSS), version 17. The findings show that there are statistical significant differences between the means of experimental group (3.43) and control group (2.68) in favor of the

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experimental group, which enhances the result that there is a positive impact of the NLP on employees' performance. Based on the research findings and conclusions, a number of recommendations and future research suggestions are proposed.

Key Words:

Neuro Linguistic Programming (NLP), Employee's performance, Self-efficacy, Communication skills, Problem-solving skills, Employees' productivity.

أثر البرمجة اللغوية العصبية على أداء العاملين دراسة تجريبية في مدينة الحسين بن عبد الله الثاني الصناعية - الأردن

الملخص

اختبرت الدراسة أثر البرمجة اللغوية العصبية (NLP) على أداء العاملين واستخدمت المدخل التجريبي في مدينة الحسين بن عبد الله الثاني الصناعية ، حيث ركزت الدراسة على أداء العاملين المبني على السلوك من خلال أربعة أبعاد: الكفاءة الذاتية ، مهارات التواصل ، مهارات حل المشكلات و الإنتاجية. تكونت عينة الدراسة من (44) موظفاً من مختلف الأقسام الإدارية تم توزيعهم على مجموعتين عشوائياً : المجموعة الأولى (المجموعة التجريبية) حضرت برنامجاً تدريبياً في البرمجة اللغوية العصبية من قبل أحد المتخصصين بهذا المجال ، والثانية مثلت المجموعة الضابطة. وقد تم التأكد من تجانس التباين بين المجموعات وفقاً لإختبار (Leven) ، ثم أجري اختبار قبلي واختبار بعدي من خلال توزيع استبانته على المدراء وعلى مدى فترتين زمنيتين مختلفتين.

استخدم اختبار (ت) للعينات المستقلة ، وللعينات المزدوجة لقياس الفروقات بين الاختبارات القبلية والبعدية وذلك بالاعتماد على الحزمة الإحصائية للعلوم الاجتماعية (SPSS) نسخة 17. لقد بينت النتائج أن هناك فروقات إحصائية مهمة ما بين متوسط أداء المجموعة التجريبية (3.43) وبين متوسط أداء المجموعة الضابطة (2.68) لصالح المجموعة التجريبية مما يعزز من فرضية أن هناك أثر إيجابي للبرمجة اللغوية العصبية على أداء العاملين . وبناء على نتائج البحث قدم الباحثان عدد من التوصيات بالإضافة إلى مجموعة من المقترحات لإجراء بحوث مستقبلية في هذا المجال.

1. Introduction

Organizations seek to have highly qualified staff that have the abilities and skills that help the organization to progress and succeed. This requires providing the necessary training for those employees, which is not without cost. Neuro Linguistic Programming (NLP) is one of the new programs that are adopted in this field, where management have begun to realize its vital role in business.

NLP, which is about studying human excellence in all its forms, and identifying patterns in thinking, self beliefs, and behavior help individuals to know how to consciously choose which patterns to keep and which ones to change.

NLP is considered as an effective tool for training staff and promoting their abilities to help them to identify their goals in a positive way. These benefits - if achieved among workers - will be reflected positively on the organization in which they work. NLP helped many individuals to improve their communication skills and achieve their business and personal goals.

This study tries to investigate the impact of Neuro Linguistic Programming on employees' performance to promote individual communication skills, self-efficacy, problem-solving skills, and productivity.

2. Problem Statement

Despite the fact that NLP has been studied for decades, very little research has been conducted to offer a better understanding of NLP as an experimental tool in business context both at local and international

levels. This study tries to investigate the NLP impact on performance by conducting a training program in NLP for employees from different managerial levels in Al- Hussein Bin Abdullah II Industrial Estates in Karak to measure results in regard to acquiring better self-efficacy, communication skills, problem-solving skills, and productivity. Building on the previous discussion, the study will try to answer the following key questions:

1. Does applying NLP improve employees' performance in organizations?
2. To what extent does NLP help employees to develop self-efficacy?
3. To what extent does NLP help employees to build better communication skills?
4. To what extent does NLP help employees to develop better problem-solving skills?
5. Does NLP result in a higher productivity level?

3. Study Aim and Objectives

The aim of this study is to examine the role of Neuro Linguistic Programming within the organization as a promising tool utilized to develop employees' performance in Al-Hussein Bin Abdullah II Industrial Estates in Karak.

Managers and employees are supposed to deal with different and diversified groups within and outside the corporation. The lack of appropriate communication skills adversely affects the completion of the

required tasks, and hence the productivity level. In addition, completion of the required tasks is strongly affected by self-efficacy; as such, skills in dealing with workplace problems will also be investigated in this study.

The primary objectives of this study are as follow:

- 1.To clarify the importance of NLP in developing self-efficacy among the employees.
- 2.To investigate the importance of NLP in acquiring and improving better communication skills.
- 3.To demonstrate the importance of NLP in acquiring and improving better problem-solving skills.
- 4.To clarify the importance of NLP in improving employees' productivity.
- 5.To undertake experimental research based on training program for employees, and to discover the inner skills and employ them in the corporation.
- 6.To carry out pre and post evaluation in order to measure the changes in performance among the employees.

4. Importance of the Study

The importance of this study stems from the following:

First, employees' performance can be extremely influenced by implementing NLP programs that may help individuals to communicate effectively and develop a clear understanding of their own capabilities

and skills. This in turn helps the organization to achieve its goals.

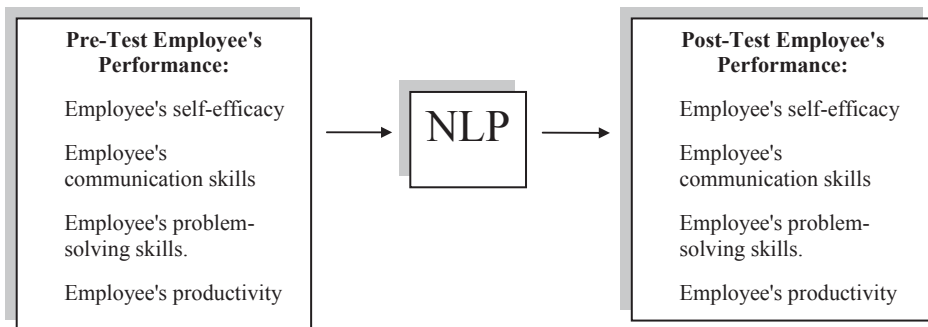
Second, to researchers' knowledge, only few studies have focused on studying the impact of NLP training on work, while the greater emphasis was on studying job-related training. We hope that this research will bridge this gap.

Third, in addition to this study, only few others have used the experimental method in studying NLP in business.

Fourth, this study will provide some recommendations which may help management to develop training programs based on NLP for their staff in order to enhance required skills and realize their objectives.

5. Model of the Study:

The following model shows the impact of the independent variable (NLP) on the dependant variable (employees' performance)



(1): The Research Model

Source: Developed by the researchers in the light of the relevant literature.

6. Theoretical Background

In the following section, some theoretical and related experimental findings on the concept of NLP and its impact on employee's performance are presented with a focus on each variable individually.

6.1 Neuro Linguistic Programming (NLP)

Literature of NLP shows that researchers look at it from different angles. Some believe it is still considered as an art, while others describe NLP as a methodology or a group of techniques. Also, we find researchers who say NLP is both an art and science at the same time.

O'Connor (2001) defines NLP as the study of the brilliance and quality of how outstanding individuals and organizations obtain their outstanding results. Thompson, et. al (2002) defined NLP as a group of techniques that are designed to help make you better at what you do by understanding yourself and others and teaches you how to communicate effectively allowing the formation of better relationships. It also defined by Sandhu (1991) as the art of creating models of human excellence with a focus on communication and outstanding behavior in the fields of therapy, education, medicine, and business. O'Connor & Seymour (2002) defined again NLP as the art and science of personal excellence.

The basic ideas of NLP were developed around 1973 by Richard Bandler and John Grinder. They studied the communication and influencing patterns of successful people in various fields. By analyzing and modeling their behaviors, they hoped to identify behavior patterns that

anyone can copy to achieve similar success (Metcalf, 2008).

Acland (1996) clarified that NLP works mainly on four pillars used as a start point to achieve the change required in different fields: the first is outcome orientation, or concentration on what specifically is wanted, the second is sensory acuity – knowing what is going on through exquisite attention to the evidence available through the senses, the third is creating and maintaining empathy and rapport with others, and the fourth is being flexible enough to do something different if what is already being done is not achieving what is wanted. NLP programs usually start with these pillars by working to release employees' capacity by directing their attention to the need for clear identification of objectives at work, to the belief that they are able to achieve these goals, and then to know how to work to achieve those goals through the proper handling of the surroundings in terms of people and events.

The interest in applying NLP programs in organizations has been increased over the past two decades, where management recognized its effectiveness in developing workers' potential skills. This interest is reflected at the academic level, where Neuro Linguistic Programming applications have extended to cover almost all areas of work, from writing advertising copy to customer service people handling phone calls, and managers motivating their people or sales people to develop their skills to win over more customers. NLP encourages teams to work together more efficiently (Graham, 2006). In using NLP, employees can improve their communication skills in order to build stronger relationships by applying different language patterns to recognize the hidden

context of what has been said. NLP is also applied in HRM through training and consulting; it can be used in goal-setting, self-management, presentation skills, problem-solving, leadership, team-building, negotiation, communication and others.

NLP is based on principles based on how thoughts, actions, and feelings work together to produce experience. These principles or assumptions are called the NLP presuppositions. These presuppositions assume that thoughts, actions, and feelings lead to specific results, if the same thoughts, actions and feelings are repeated, we'll get the same results. So if management wants to change results, this needs to change the thoughts, actions, and feelings that produce them.

The role of NLP is to help individuals to understand how they create and maintain these feelings and thoughts in order to produce better results.

Although NLP is wildly used in different aspects of life, it is criticized by writers such as Craft (2001) for its being a collection of tools and strategies with no cohering theoretical foundation. Heap (1988) and Wood (2006) assert that the concept cannot be scientifically supported or proven. Just because the name NLP sounds scientific does not guarantee that it is based on scientific knowledge or called a science. e.g., (i) that they predict on the basis of scientific understanding and (ii) the title of Neuro- linguistic programming implies bases in science, is not justified enough to prove NLP as a science (Ramakrishna, et. al, 2011). However, this doesn't mean that NLP principles do not work for those who adopt it to improve employees' performance.

NLP is outcome-oriented and as such may enable organizations and individuals to experience its impact and assess its effectiveness.

5.2 Employees' Performance

Employees' performance is an important building block of any organization. The performance of an employee is how well s/he performs his/her task duties and responsibilities. MAM Hussain, et. al (2010) identifies employees' performance as the achievement of targets of the tasks assigned to employees within a particular period of time.

Mello identifies three fields of performance that need to be evaluated during performance management, namely traits-based measures, behavior-based measures outcomes and results-based measures. However, this study concentrates on behavior-based measures, which is defined by Mello (2006) to measure what an employee does by observing and analyzing specific behaviors. The key variables here are self-efficacy, communication skills, problem-solving skills, and productivity.

6.2.1 Employees' Self- efficacy

Self-efficacy defined as the belief in one's ability to execute successfully a certain course of behavior (Bandura, 1977, 1986, 1997). Over the past years, research has demonstrated a clear connection between self-efficacy and behavior. Firstly it has been found that self-efficacy influences employee' choice of actions (Bandura, 1977), as when they avoid tasks they do not think they are up to, and choose those which they think that they are capable of accomplishing. Also self-efficacy affects the amounts of energy employees invest in a task, and the

length of time during which they preserve without achieving the desired results (Bandura and Schunk, 1981). Bandura (1997) also identifies four principal sources of self-efficacy: past performance, vicarious experience (modeling), verbal persuasion, and emotional cues.

Each of these sources has a particular importance when applied in organizations. Past performance corresponds to the presuppositions of NLP, which encourages individuals to call their previous successes constantly, in order to help them to maintain their self-confidence when facing difficulties. Modeling which is considered as the base of NLP practices and refers to studying successful strategies and rendering them models to follow is used widely when applying the training programs. The third source of self-efficacy is through verbal persuasion. NLP concentrates on the power of the word. Positive verbal persuasion induces real feelings that can directly affect our sense of ourselves and therefore the level of what we are doing. The last source of self-efficacy is emotional cues. This source assumes that individuals' perception of their own psychological state will influence their judgment of self-efficacy. If they feel afraid or anxious, they may judge themselves as less capable to accomplish a given task (Steven, et. al, 1996). NLP also assumes that body and mind affect each other, so what someone feels and thinks will be translated into actions.

6.2.2 Employees' Communication Skills

Communication is always needed in any workplace and an employee seldom works in isolation. Employees interact with their managers, co-workers and consumers on a daily basis. This makes

interpersonal communication an essential skill for today's employees. Communication is the process by which information, ideas, and understanding are shared between two or more people (Harris, 2007). One of the most desired skills in potential employees is the ability to work with others. Olivio and Kuschke (2008) say that it is essential for individuals to possess interpersonal skills to work well with others and to be able to function competently as a member of a group or team.

This idea is essential in NLP where the concentration on behaviors, the manner of speaking, and gestures and postures are important tools of communication.

6.2.3 Employee's Problem-Solving Skills

Today, problem solving is no longer an exclusive responsibility of managers. Every employee in the organization should take his/her responsibility for solving workplace problems. Mary Newton (2011) defines problem- solving as the ability to realistically and flexibly cope with a situation and find solutions to existing problems.

Every employee, whether alone or as a member of a group, experiences problems at one time or another. S/he realizes that a problem exists when s/he feels frustrated, angry, frightened, or anxious about a situation. In the workplace, problems are evident when output or productivity is not as expected, when communication and cooperation are lacking, or when conflict appears to be out of control (Carnevale and Anthony, 1990).

NLP helps employees to control their thinking patterns in a way that allows them to face and deal with their problems effectively. Also,

one of NLP pillars is flexibility which indicates that if you continue to do what you have always done, you will always get what you have always got" (Graham, 2006). That is why NLP is considered an outcome-focused, solution-oriented managerial approach.

6.2.4 Employees' Productivity

Individual employees and work teams differ in how much they contribute to the organization, not only in what they do but also in how well they do it; the organization's overall performance depends to a large degree on the productivity of individuals and groups within the organization (Martocchio, 2006).

Rolloos (1997) defines productivity as what employee can produce with the least effort. Productivity is also defined by Sutermeister (1976) as the output by employee hour, quality considered.

Tawkiat and Phusit (2010) mention that previous literature has referred to four types of productivity; productivity measurement, productivity performance, productivity improvement, and productivity change. This study tries to investigate productivity improvement through factors like accuracy, punctuality and effort by utilizing the NLP program. It is believed that the so-called soft skills provided by programs like NLP present a good potential for improving productivity. Therefore, employees' training should not only be restricted to the know-how of doing their job (Mohamed, et. al, 2008).

7. Previous Studies

Nicoleta, et. al, (2011) discuss whether the rate of sales in the car

dealers and real estate agents will be increased by using NLP. The research methods that are used consist of the documentary research and quantitative research, while a questionnaire is used as a data collection method. The results of this study show that: The customers' satisfaction level for sales agents who use NLP is higher than those who do not use it. The answers obtained at the questionnaire prove the fact that 83% of the real estate agents claimed that over 50% of the customers have returned for a new acquisition.

Denis Coleman (2011) investigates how emotional intelligence (EI), coaching and NLP techniques can be used to improve customer relationship management (CRM) processes in the retail sector. The study uses observation based method to understand the situation before the training in addition to a questionnaire to evaluate services before and after the training. The results indicate that regular customers notice positive changes in staff services.

Ruth Slater, et. al, (2010) studies the role that NLP can play within knowledge teams' communication skills. A training program is developed based on NLP principles aimed at improving communications skills. The results show that the process has helped the teams to develop their relationships and contributed to recruit and select many successful employees.

Susanne W. (2010) explores how and why a focal firm would invest in NLP in a sales process context. Data is gathered from HR managers in the corporation. Results show that skills obtained from the NLP training not only influence the salesperson customer interaction, but

also influence the interpersonal interaction among colleagues. They also affect their skills in managing workplace conflicts.

Melody Cheal (2008) tests the hypotheses that NLP has a positive impact on self-esteem, self-efficacy, optimism and locus of control. Test group and control group completed pre-questionnaire and post- questionnaire. Changes in both self-esteem and self-efficacy suggest that the interventions used did allow people to experience positive change in the short term.

A. Singh and Abraham (2006) examine the role of NLP within the organization to promote performance and production in organization. Data collection is undertaken through the use of questionnaire and face to face interviews. The results show an improvement in communication skills through delivering and receiving messages in a proper way, which in return affects the work environment and employees' performance.

Thompson, et. al, (2002) measure the impact of NLP training on the performance of individuals and organizations in regards to self-esteem, self-efficacy, adaptive-selling, organizational commitment, and social desirability. In this study 67 participants came from 12 organizations completed questionnaires before and after the training program. With the exception of self-efficacy, all have shown increase over the start of course measure.

8. Research Design and Methodology

This research uses the deductive approach. The methodological

approach is quantitative and is based on collecting data in numerical form to measure and analyze the impact of NLP on employee's self-efficacy, communication, problem-solving skills, and productivity, in order to yield an accurate and unbiased result that can be generalized to some larger population by applying the experimental methodology, which is set up to examine possible cause and effect relationships between variables. Pretest and posttest experimental and control group design is adopted in this study.

The sample consists of all employees in the administration of Al-Hussein Bin Abdullah II Industrial Estates in Karak. Employees are divided into experimental group (23 participants) and control group (21 participants), where members of each group are selected randomly, taking into account that all departments were represented. This sampling process is the least bias and offers the most generalizability according to Sekaran (2009). Forty four (44) questionnaires are distributed to seven managers in order to evaluate the employees' performance in their departments, and (44) questionnaires are distributed to the employees themselves in order to answer questions about their ability to be programmed. The director was excluded in order to avoid bias, and two of the employees were absent.

9. The NLP Training program

The qualified training program is designed by both the researchers and trainer to include all the research variables based on previous literature in NLP.

The training took place in Al- Hussein bin Abdullah II Industrial Estate's main theatre. The program ran for four days - an average of 16 hours. The participants were 23 employees from seven different departments and were holding different positions. None of the participants had previously attended any NLP workshops.

The trainer is an NLP master practitioner and specialized in releasing individuals' capabilities and improving performance.

The main focus areas of training are:

1. NLP concept.
2. The origin of NLP.
3. NLP role in our personal and professional lives.
4. Presuppositions of NLP.
5. Motives.
6. Problem-solving through the concept of "flexibility".
7. Outcome Frame (negative and positive recognition).
8. Positive thinking.
9. Modeling
10. Priorities management

10. Data Analysis

In this study, the content validity of the survey questionnaire is considered because it is tested by means of a pre-test using research professionals and respondents (employees) before starting the survey, while the reliability of the scales was established by utilizing Cronbach's alpha. In regards to ability to be programmed, Cronbach's alpha

was (.86) which is considered acceptable. Considering the present study variables as a whole, Cronbach's alpha varied from (.83 - .90), which is also considered acceptable for this type of research. These results are shown in tables 1 and 2.

Table (1)
Cronbach's Alpha for the employees' ability to be programmed questionnaire

Variables	No. of Items (Question)	Cronbach's Alpha
ability to be programmed	10	0.86

(Table 2)
Cronbach's Alpha for the Scales

Variables	No. of Items (Questio)	Cronbach's Alpha
Self-efficacy	7	0.83
Communication skills	7	0.90
Problem-solving skills	7	0.86
Productivity	7	0.86
Total	28	0.89

The Experimental Design

The experimental design is the most appropriate for measuring differences in the performance of employees before and after applying the NLP program where two groups (one experimental and the other control) are both exposed to the pre-test and post-test. Only the experimental group receives training in NLP. Figure (2) shows the experimental design that is used in this study.

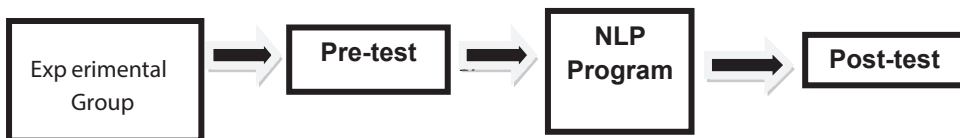




Figure (2):
Pre-test and Post-test experimental and control groups

Before applying the NLP program and starting the experiment, the researchers measure the equivalence between the two groups (experimental and control) to make sure that the improvement in employee's performance if achieved is due to the use of NLP. Therefore, the study tool is applied to members of the study sample of the two groups (experimental and control) before applying NLP and compared with the experimental group. Data are analyzed by using independent sample T-test to compare between groups and paired sample T-test to compare differences within the experimental group. Eta squared (μ^2) according to Cohen's classification is used to measure the effect size of the program which is considered large when the result is ($\mu^2 \geq 0.14$).

It has been verified to meet the requirements of T-test by applying normal distribution tests: Skewness coefficient and Kolmogorov-smirnov test, in addition to Levene's test for equality of variance. The ratio of Skewness to its standard error can be used as a test of normality (that is, normality can be rejected if the ratio is less than (-2 or greater than +2). A large positive value for Skewness indicates a long right tail; an extreme negative value indicates a long left tail" (SPSS Guide, 2007).

Kolmogorov-Smirnov test assesses whether there is a significant depar

ture from normality in the population distribution for each of the groups. The null hypothesis states that the population distribution is normal if the values are greater than ($\alpha \geq .05$). Levene's test assesses whether the population variances for the groups are significantly different from each other. The null hypothesis states that the population variances are equal. When P-value is greater than ($\alpha \geq .05$) the null hypothesis cannot be rejected. (Robert & Jane, 2011). Tables (3) and (4) present the results of the three tests.

Reading of the Skewness (Kolmogorov-Smirnov) tests findings shows that all variables are normally distributed. Also, Levene's test indicates equality of variance between experimental group and control group in pre-test.

Table (3)

Skewness Coefficients & (Kolmogorov-Smirnov) test & Levene's test for normal

Variables	Normal distribution			equality of variance	
	Skewness	Kolmogorov-smirnov test	Sig.	F	Sig.
Self-efficacy	0.11	0.974	0.409	0.082	0.775
Communication skills	0.14	0.963	0.164	0.034	0.854
Problem-solving skills	0.20	0.969	0.270	0.642	0.427
Employees' productivity	0.21	0.967	0.269	0.640	0.426
Total	0.17	0.969	0.270	0.912	0.345

Table (4) shows that there are no statistical significant differences on ($\alpha \leq 0,05$) between experimental group and control group in regard to the

four variables (self-efficacy, communication skills, problem-solving skills, and employees' performance). The same kind of difference is not shown in total, which indicates the equivalence of the two groups before applying the program. The following is a detailed presentation of results:

Table (4)

Independent-samples T-test for comparing means between groups in pre-test

Variables	Groups	Mean	Std. Deviation	df.	t	Sig.
Self-efficacy	experimental	2.4795	.36670	42	0.55	0.956
	control	2.4857	.37526			
Communication skills	test	3.2298	.33292	42	0.321	0.750
	control	3.1973	.33950			
Problem-solving skills	experimental	2.1752	.55937	42	0.142	0.163
	control	2.4245	.60537			
Employees' productivity	experimental	2.5752	.55937	42	1.41	0.165
	control	2.8245	.60537			
Total	experimental	2.6149	.34592	42	1.06	0.293
	control	2.7330	.39019			

11. Results

To test the main hypothesis of this study which states that "there is no significant statistical difference between the mean of employees' performance pre- and post applying NLP? T-test (Independent Samples Statistics) is used and the results in Table

(5) show that there are significant statistical differences on ($\alpha \leq 0,05$) between the means of experimental group (3.43) and control group (2.68) in post- test in favor of the experimental group, which enhances the result that there is an impact of the NLP program on employees' performance. Also, the calculated effect value (μ^2), according to Cohen's classification, refers to the presence of a large impact of NLP program on employees' performance, and this reached 44 percent.

Table (5)

Independent-samples T-test for differences in means between groups in post-test in total

Groups	Mean	Std. Deviation	df.	t	Sig.	Effect size μ^2
experimental	3.43	0.45	42	5.74	0.00	0.44
control	2.68	0.26				

Examining the differences in experimental group's performance in post-test after applying the program (in total level): by using T-test (Paired Samples Statistics).

Table (6) shows that there are statistically significant differences on ($\alpha \leq 0,05$) between the means of experimental group in pre-test and post-test in favor of the post test, which enhances the result that there is an impact of the NLP program on employees' performance. Cohen's classification indicates that the impact of NLP program on employees'

performance within the experimental group is large and that it has reached 0.67.

Table (6)

Paired-samples T-test for differences in means within experimental group in pre-test & post-test

Test	Mean	Std. Deviation	df.	t	Sig.	Effect size μ^2
Pre-test	2.61	0.34	22	6.76	0.00	0.67
Post-test	3.43	0.54				

To test the sub hypotheses of the study which examine if there is a significant statistical difference between the mean of employees' (self-efficacy, communication skills, problem-solving skills and productivity) pre- and post applying NLP program and to examining the differences in experimental group's performance after applying the program according to each variable, the researchers used T-test (Independent Samples Statistics) and T-test (Paired Samples Statistics). The results in tables (7,8,9,10,11,12,13,14) show that there are statistically significant differences on ($\alpha \leq 0,05$) between the means of experimental group and control group in post- test in favor of the experimental group in (self-efficacy, problem-solving skills and productivity). However, there is no proof that there has been a positive impact of NLP on employee's communication skills. Also, there are statistically significant differences on ($\alpha \leq 0,05$) between the means of experimental group in pre-test &

post test in favor of the post test in regards to (self-efficacy, problem-solving skills and productivity). This enhances the result that there is an impact of the NLP program on employee's performance in these variables. Calculating the effect size according to Cohen's classification confirms the presence of a large impact of NLP on employees' self-efficacy, problem-solving skills and employees' productivity within the experimental group, while it confirms the presence of a little impact of NLP on experimental group's communication skills.

Self-efficacy:

Table (7)

Independent-samples T-test for differences in means between groups in post-test of self-effi-

Groups	Mean	Std. Deviation	df.	t	Sig.	Effect size μ^2
experimental	3.29	0.34	42	6.74	0.00	0.519
control	2.55	0.38				

Table (8)

Paired-samples T-test for differences in means within experimental group in pre-test
& post-test of self-efficacy variable

Test	Mean	Std. Deviation	df.	t	Sig.	Effect size μ^2
Pre-test	2.47	0.36	22	9.70	0.00	0.81
Post-test	3.29	0.34				

Communication Skills:

Table (9)

Independent-samples T-test for differences in means between groups in post-test of communication skills variable

Groups	Mean	Std. Deviation	df.	t	Sig.	Effect size μ^2
experimental	3.28	0.34	42	1.52	0.135	0.052
Control	3.12	0.33				

Table (10)

Paired-samples T-test for differences in means within experimental group in pre-test & post-test of communication skills variable

Test	Mean	Std. Deviation	df.	t	Sig.	Effect size μ^2
Pre-test	3.22	0.33	22	0.602	0.553	0.02
Post-test	3.28	0.34				

Problem-Solving Skills:

Table (11)

Independent-samples T-test for differences in means between groups in post-test of problem-solving skills variable

Groups	Mean	Std. Deviation	df.	t	Sig.	Effect size μ^2
experimental	3.42	0.68	42	5.59	0.00	0.43
Control	2.41	0.48				

Table (12)

Paired-samples T-test for differences in means within experimental group in pre-test & post-test of problem-solving skills variable

Test	Mean	Std. Deviation	df.	t	Sig.	Effect size μ^2
Pre-test	2.17	0.55	22	9.69	0.00	0.81
Post-test	3.42	0.68				

(Table (13
Independent-samples T-test for differences in means between groups in post-test of
employees' productivity variable

Groups	Mean	Std. Deviation	df.	t	Sig.	Effect size μ^2
experimental	3.49	0.78	42	4.06	0.00	0.28
Control	2.64	0.59				

(Table (14
Paired-samples T-test for differences in means within experimental group in pre-test
& post-test of employees' productivity variable

Test	Mean	Std. Deviation	df.	t	Sig.	Effect size μ^2
Pre-test	2.57	0.55	22	6.75	0.00	0.67
Post-test	3.49	0.78				

The study question is as follows:

To what extent can the employees in Al-Hussein Bin-Abdullah II Industrial Estates in Karak be considered as able to be programmed? The researchers calculated the mean and the standard deviation of the employees' responses on the scale of ability to be programmed.

The results in table (15) show that the level of employees' ability to be programmed in Al-Hussein Bin-Abdullah II Industrial Estates in Karak is high with a mean of 3.68. This result indicates that

Table (15)
The mean and standard deviation for the level of employee's responses on the scale of ability to be programmed

Scale	Mean	Std. Deviation	Level
Employees' ability to be programmed	3.68	0.53	High

11. Discussion of the Findings

11.1 Self-efficacy

It is found that NLP has a significant impact on employees' self-efficacy in Al-Hussein Bin Abdullah II Industrial Estates in Karak and the effect is significant between the experimental and the control groups. These results are compatible with the claims of Melody (2008) who confirmed that NLP techniques have a positive impact on self-efficacy. On the other hand, the results of this study do not correspond to the findings of Thompson, et. al (2002), which indicate no impact of NLP on employees' self-efficacy.

Employees in Al-Hussein Bin Abdullah II Industrial Estates in Karak show a great desire for change, especially with regard to their belief in their ability to reach the goals they aim to achieve in the workplace. NLP program provides employees with easy and applicable techniques with practical examples. This makes it possible for them to change and encourage employees to call their internal abilities and use in the workplace.

11.2 Communication Skills

The results of this study show that there are no differences in the performance of employees with respect to communication skills before and after the NLP training and that the effect size is low, albeit the fact that communication skills are considered one of the main interests of NLP. These results differ in some previous studies that examine this aspect of performance. Such studies include Nicoleta, et. al (2011), Denis Coleman (2011), Ruth Slater, et. al (2010), A.Singh & Abraham (2006). They all prove that there is a positive impact of NLP on employees' communication skills in regard to the internal relationships or even with customers.

In searching for unexpected results of the non-appearance of differences in communication skills between pre and post application, based on the fact that communication skills are essential in organizations work, the researchers found that the administration of Al-Hussein Bin Abdullah II Industrial Estates in Karak has provided a training course in communication skills for a number of its employees before the start of the application of NLP program, which may have had an impact on the level of performance in this variable.

11.3 Problem-Solving Skills

The findings of this study confirm that NLP has a significant impact on the employees' problem-solving skills and that the effect size is large. The previous studies discuss this variable by focusing on some aspects of workplace problems which the employees may face; howev

er, none has studied the concept of problem-solving skills in general and or linked it to the role of NLP in organizations. Susanne (2010) proves that NLP affects the employees' skills in managing workplace conflicts

The NLP training focuses on the flexibility. The employee with the most flexibility will have more choices and, therefore, will have the largest influence in any system. More choices are certainly better than fewer choices. Similarly, if what the employee is doing is not working, s/he should do something else. This way in introducing the idea helps the employees to evaluate how they deal with the workplace problems and work to solve them.

11.4 Employees' Productivity

Results of data analysis in this study indicate that NLP has a significant impact on employees' productivity with respect to the effort, punctuality and accuracy. These results are compatible with the findings of Nicoleta, et. al (2011) who concluded that applying NLP affects the employees' productivity within the car dealers and real estate agents.

The results of this study confirm that NLP helps employees to acquire knowledge that may lead into positive change and better use of time, and resources.

12. Recommendations of the Study:

In the light of the research results and conclusions, the researchers recommend:

1. Cooperation with NLP centers and trainers to hold workshops and training in NLP to cover the needs of the organizations with regard to improving the employees' performance and to building a work environment that stimulates the employees and workers and to serve the organization and attain its goals and objectives.

2. Implementation of a plan that consists of preparing NLP trainers among the employees themselves to deliver NLP techniques to the other employees as part of the company's training programs. This should enable is the organization to hold regular training programs within the company that cater for the promotion of different skills every time, or to hold training programs for new employees as part of vocational preparation.

3. Universities should play a vital role in preparing business students to effectively integrate NLP into the business/marketing educational curriculum. By this, universities can design and implement NLP courses into business/marketing educational programs to give the students the opportunity to enhance their knowledge in this area and make use of it later in their work.

4. Working on further studies concerned with administrative and behavioral factors related to the performance of employees through different variables that are not addressed by this study like team- building, negotiation skills and goal setting.

13. Future Study:

In the light of the study results and conclusions the researchers propose several recommendations for future research, as follows:

1. This study has investigated the impact of NLP on performance of administrative employees only. Further investigation may take place in the future to cover the workers in different professions.

2. Future research could be directed towards investigating if NLP positive impact on performance would be more important for managers than for employees, in view of the fact that this study has not dealt with each job title separately.

3. Another possible area to be investigated in future research could be the continuity of the impact of NLP on performance; for this study has focused on testing the impact of NLP in short-term only.

4. This study has tested the impact of NLP on particular variables, but has not taken into consideration other important aspects that NLP may have a vital role in promoting as those pertaining to goal setting, team building, presentation skills, and negotiation.

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